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JAMES SPEED ROGERS

1891–1955

ENTOMOLOGICAL NEWS

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James Speed Rogers, 1891–1955

With the passing of Doctor James Speed Rogers, at the relatively early age of 63, the world has lost the leading student of the biology and ecology of the Tipulidae, largest family in the order Diptera (over 11,000 species). Dr. Roger's longtime associate, Dr. Theodore H. Hubbell, present Director of the Museum of Zoology at the University of Michigan, has prepared a detailed account of his life and work.[1] In the brief space available I am able to note only a few points of general and personal interest in the career of this outstanding worker and dear personal friend.

Dr. Rogers, affectionately known to his close friends by his middle name of "Speed," was born in Dayton, Indiana, November 4, 1891, son of the Reverend Mr. Henry Martyn Rogers and Alma Goodloe (Smith) Rogers. He died suddenly and unexpectedly of a heart ailment at Ann Arbor, Michigan, on May 17, 1955. Following his high school days, he briefly attended Hanover College, Hanover, Indiana, later going to the University of Michigan from whence he received successively the degrees of A.B. (1915), A.M. (1916), and Ph.D. (1930). From 1919 to 1922 he was on the staff of Grinnell College, Grinnell, Iowa, which he left to become Professor of Biology at the University of Florida, from 1922 to 1946. In 1946 he was called to his Alma Mater to become Professor of Zoology and Director of the Museum of Zoology, a position that he held to the moment of his decease. On April 18, 1918, he was married to Miss Irene Russell, whom he had known in his college days,

[1] HUBBELL, THEODORE H., James Speed Rogers, 1891–1955. Report of the Director, Museum of Zoology, University of Michigan 1954–1955, pp. 8–19, portrait; 1956.

and who survives him, together with his two children, Dr. James Speed Rogers and Mrs. Irene Russell Howard. At the time of his passing he was a member of several of the leading entomological societies.

Although his studies on the biology of crane-flies occupied virtually all of his research time, he prepared, with Drs. Hubbell and Byers, one of the outstanding university texts, "Man and the Biological World." [2] His published papers on the Tipulidae, 18 in number, have been listed in the Bibliography prepared by Dr. Hubbell. To this record one further article that had been omitted inadvertently, should be added.[3] While all of the papers that he wrote on the biology and ecology of the Tipulidae are important, three are so outstanding that they must always rank as models in their treatment of the subjects.[4]

At the time of his passing, Dr. Rogers had some further papers in various stages of preparation, one of which (on *Lipsothrix sylvia*) was completed by his student, Dr. George W. Byers. Others are sufficiently advanced that they may be reviewed and eventually published. However, as is so often the case with outstanding workers who are overwhelmed with other duties, the great mass of his observations remains unpublished, and very many, perhaps the great majority, of his numerous observations passed with him. There remain, however, carefully prepared field notes, voluminous records, and an unparalleled collection of the immature stages in the family, which will provide the basis for future work on the subject.

[2] Rogers, J. S., with T. H. Hubbell and C. F. Byers. Man and the Biological World. Ed. 1, pp. x–607, 180 figs.; 1942. Revised Ed. 2: xiv–690, 375 figs.; 1952. McGraw Publishing Co. A Spanish translation by R. Muratorio was published in Buenos Aires in 1946.

[3] Rogers, J. S. Descriptions of the immature stages of some New Zealand crane-flies: Part 1. Trans. New Zealand Inst. 58: 301–309, 14 figs.; 1927.

[4] Rogers, J. S. The summer crane-fly fauna of the Cumberland plateau in Tennessee. Occas. Papers Mus. Zool., Univ. Michigan 215: 1–60, 5 pls.; 1930. The ecological distribution of the crane-flies of northern Florida. Ecol. Mon. 3, No. 1: 1–74. 25 figs.; 1933. The crane-flies (Tipulidae) of the George Reserve, Michican. Misc. Publ., Univ. Michigan 53: 1–128, 8 pls., 1 map; 1942.

Additional to his great work on the immature stages of crane-flies, Dr. Rogers later in his career became intensely interested in problems of subspeciation, clinal distribution, and comparable aspects, and in his attempts to solve some of the problems that are found here, built up a vast collection of the adult flies in this group. He once told me that he wished he could secure 10,000 specimens of every species. Dr. Hubbell estimates that the collection may include 100,000 pinned specimens of the adult flies, with between 400,000 and 1,000,000 still in papers, accompanied by more than 7,000 microscope slides showing the critical structures needed in classification, particularly the wings and male genitalia. The vast bulk of this unparalleled collection is from the United States and Canada and many, if not the greatest proportion thereof, were collected by him while on his various field excursions. A fuller account of this outstanding work is included in Dr. Hubbell's paper.

Very early in our careers, Speed and I were attracted to one another through our mutual interest in the crane-flies, and it was soon decided that he would devote his principal energies to the biology and ecology, while I hoped to give more and more of my time to a taxonomic study of the group. To further this arrangement, I at once turned over to Speed my extensive collections of the immature stages of crane-flies that had formed the basis of my report "The crane-flies of New York, II, Biology and Phylogeny." Even at that early period, Speed once wrote that "he hoped that some day the two of us might perhaps live sufficiently long to make this group the best known of all the families of the Diptera."

Because of our wide geographical separation, we had very few opportunities to meet or to enjoy joint field trips. Two outstanding meetings may be mentioned. In June 1921 we enjoyed a two-weeks' collecting trip across southern Indiana, beginning at Hanover, the family home, continuing westward across the southern counties to New Harmony on the Wabash River. This trip was rich with happy experiences for both of us. It was at New Harmony that we had the good fortune to locate many hitherto unknown data concerning Thomas Say,

which were later used by Weiss and Ziegler in their classic account of the subject.[5] In July 1928, prior to the meetings of the Fourth International Congress of Entomology at Ithaca, N. Y., the late Dr. Fred W. Edwards of London, England, with Mrs. Edwards, visited us at Amherst for one week, and Speed came from Gainesville, Florida, for the occasion. Most enjoyable and profitable field excursions during the days, and happy evenings spent around a table pinning and papering the collected materials, provided all of us with unforgettable memories. During that time a vast range of subjects relating to the Tipulidae came under review, adding to a better understanding and appreciation for all of us.

Speed Rogers developed various students of crane-fly biology and ecology, both at Florida and later at Michigan. The more outstanding of such students include Drs. R. E. Bellamy, George W. Byers, Dennis Hynes, and Benjamin Foote. It is expected and believed that these students will carry the Roger's tradition, as it concerns the Tipulidae, far into the future. To persons such as myself, who have been privileged to a long association with Speed Rogers, a simple expression of appreciation and thanks seems quite inadequate. It is certain that the lives of all of us were vastly enriched by this association and by the priceless friendship of a great and kindly man.

The accompanying portrait of Dr. Rogers was taken by Dr. George W. Byers, in the Museum of Zoology at Ann Arbor, within a few days of his death.

CHARLES P. ALEXANDER

[5] WEISS, HARRY B. and GRACE M. ZIEGLER. Thomas Say, early American Naturalist, pp. xiv–260, 27 illustrations; 1931. (Reference, p. 231.)

Redescriptions of Ewing's Oribatid Mites, I—Families Zetorchestidae, Hermanniellidae (Acarina: Oribatei) [1]

By Tyler A. Woolley, Department of Zoology, Colorado A. & M. College, Fort Collins, Colorado

Two summers ago the writer received a series of pencil drawings of Ewing's type oribatids from Dr. E. W. Baker, Curator of Acarina at the U. S. National Museum. Dr. Baker suggested that the recipient finish the drawings and redescribe the mites for publication. Following this suggestion the redescriptions were begun.

Originally the author planned to incorporate these drawings and redescriptions in reviews or revisions of the various families involved. This was done in a few minor instances. Subsequently, however, the writer became convinced that such delay would defer the publication of these drawings for too long a time; that early publication of the redescriptions and drawings would be an asset to anyone whose research might require exact knowledge of Ewing's species.

The writer, therefore, proposes to submit a series of articles on Ewing's type oribatids for publication. The redescriptions and discussions of these forms will be presented in a somewhat cursory fashion, without attempts to do much more than identify and illustrate the mites. It may be possible later to incorporate these data into more effective arrangements, such as reviews or revisions of families or genera.

The author has attempted to utilize the same general sequence of description as employed by Ewing. Some statements of the latter are incorporated in the redescriptions in more modern terms by the use of current acarological terminology. Discrepancies or minor variations in the descriptions are indicated by parenthetical means.

It should be noted that while the current article is first in the numerical designation of the series, several redescriptions

[1] Research supported by a grant-in-aid from the National Science Foundation.

preceded this writing (Woolley & Higgins, 1955; Woolley, 1955; Woolley, 1956).

The writer expresses his sincere appreciation to Dr. E. W. Baker for the drawings of Ewing's type oribatids, recognition of which is made by initials on the finished plates.

Family Zetorchestidae Michael, 1898

According to Baker and Wharton (1952) the principal characteristic of the family Zetorchestidae is the pronounced development of the fourth pair of legs, which enables these mites to jump. Grandjean (1951) cites this feature and other details in his descriptions of the family and its genera *Zetorchestes, Saxicolestes, Diorchestes, Belorchestes* and *Litholestes.*

The two species known by Ewing were *Zetorchestes micronychus* Berlese, 1888 and *Zetorchestes equestris* Berlese, 1908. Ewing (1909b) cites the collection of a specimen of the former species by C. R. Crosby at Columbia, Missouri, but no date is indicated. Dr. Baker's drawing is of the latter species, which was collected by C. R. Crosby in trash at Columbia, Missouri. Its description follows.

Zetorchestes equestris Berlese, 1908. (Figs. 1, 2)

Color black; rostrum blunt; rostral hairs stout, simple, curved at tips, inserted in short peduncles. Lamellae roughened plates at sides of propodosoma, divided by a suture mid-way between insertion of lamellar hair and base of pseudostigmata. Lamellar hairs long, simple, incurved, extended beyond anterior tip of rostrum, twice as long as rostral hairs, narrower. Surface of propodosoma with small knobs. Interlamellar hairs fine, decurved, inserted half their lengths from medial edges of lamellae at level of pseudostigmata, about four times their lengths apart. A glandular area posterior and medial to insertions of interlamellar hairs. Pseudostigmata large, cup-like, contiguous with posterior width of lamellae. Pseudostigmatic organ clavate, about twice as long as interlamellar hairs, setose at tips.

Hysterosoma almost circular in outline (specimen broken on right side), with a prominent posterior tubercle. Seven pairs

of prominent, simple bristles on dorsum (Fig. 1). Two pairs of glandular fissures, one pair antero-laterad of c:2 bristles (antero-lateral corner); second pair posterior and laterad of large tubercle at distal end of hysterosoma.

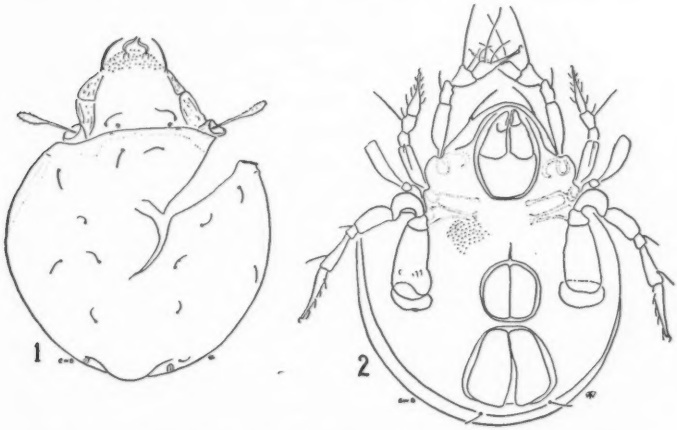

FIG. 1. *Zetorchestes equestris* Berlese, 1908, from the dorsal aspect. Specimen broken on right side by pressure of coverslip.
FIG. 2. *Zetorchestes equestris* Berlese, 1908, from the ventral aspect.

Venter with a prominent camerostome; chelicerae stout. Pedunculate insertions of lamellar hairs visible antero-laterad of camerostome.

Surface of ventral plate covered with small knobs. Genital opening nearly circular, close to anal opening and about three-fourths as long as latter. Anal opening broadly triangular; anal plates agape in specimen due to pressure of coverslip. A single pair of adanal setae posterior to anal opening.

Apodemata I curved posteriorly adjacent to camerostome at level of base of chelicerae. Tibia of leg I an expanded triangle, with long tactile bristle (Fig. 2). Tarsi of leg I ending in a single claw, setal arrangement incompletely shown in Fig. 2. Apodemata II and III extended mediad, parallel and close to each other; insertions of legs II and III close together. Distal

parts of legs II and III incompletely illustrated in original drawings. Insertions of legs IV at level of middle of genital aperture. Leg IV modified for jumping; coxa with triangular cap; trochanter greatly curved; genu short, between stout femur and distally expanded tibia; tarsus attenuated, ending in a single claw.

Length 400 μ, width 300 μ.

Discussion. Ewing (1909) indicates both *Zetorchestes micronychus* and *Z. equestris* as having been collected in trash by C. R. Crosby at Columbia, Missouri. Berlese's original description of *Z. equestris* (1908) is rather terse and without an accompanying figure. He cites the location as Columbia, which Grandjean (1951) indicates to be in Canada.

Family Hermanniellidae Grandjean, 1934

The distinctive characteristic of this family is a projected lateral peduncle on each side of the opisthosoma. This peduncle constitutes the opening of an oil gland duct.

Four varieties of the genus *Hermanniella* Berlese, 1908, are listed by Ewing (1918), two of which are redescribed below as separate species.

Hermanniella robusta Ewing, 1918. (Figs. 3, 4)

Rostrum depressed, rostral hairs not visible. Dorsum of propodosoma with two prominent humps on anterior face, surface pitted; an elevated shelf anterior to pseudostigmata; a median trough near hysterosoma, between pseudostigmata. Interlamellar hairs erect, barbed, inserted between pseudostigmata on each side of median trough. Pseudostigmata prominent cups (Figs. 3, 3A); pseudostigmatic organs erect, with barbed tips.

Hysterosoma oval in outline (specimen slightly tilted), with pitted surface; with nine pairs of stout, erect hairs, all hairs of equal size. Glandular tubercle as in Fig. 3.

Chelicerae stout, beneath propodosomal prominences (as seen in tilted specimen). Apodemata broad plates in anterior part of venter, apparently flattened. Setal insertions as shown in

Fig. 4. Genital aperture nearly circular, genital plates oval, with four pairs of setal insertions visible; g:2 remote from medial margin of plates, other insertions approximating medial margin of plates. Anal aperture separated slightly from genital opening, broadly oval; anal plates somewhat triangular, with two pairs of simple setae near median margin of plates. Two adanal setal insertions laterad of anal aperture.

Insertions of legs I and II in conical sheaths; coxae of legs III and IV expanded distal to insertions.

Length 800 μ, hysterosoma 642 μ; width (tilted position) 470 μ.

H. E. Ewing collected a single specimen from Mary's Peak, Oregon.

Hermanniella occidentalis Ewing, 1918. (Figs. 5, 6)

Propodosoma broadly triangular, dorsum pitted. Rostrum bluntly pointed, rostral hairs short, incurved. Lamellar hairs erect, stiff, directed forward, inserted half their lengths from and almost directly behind rostral hairs. Posterior part of propodosoma elevated and rounded between pseudostigmata. Interlamellar hairs nearly twice as long as lamellar hairs, erect, slightly outcurved, inserted laterad of rounded summit of propodosoma, closer to pseudostigmata than to median line. Pseudostigmata depressed cups, rims of cups continuous with surface of propodosoma. Pseudostigmatic organ clavate, setose at tip, with darkened center (Fig. 5A).

Hysterosoma broadly oval, dorsum pitted, with nine pairs of strong, erect setae; median posterior pair of dorsal setae heavier than others. Lateral oil gland ducts pedunculate, extended from lateral surface between legs III and IV, about mid-way between anterior and posterior margins (Fig. 5).

Camerostome triangular, two setae posterior to chelicerae. Apodemata and setal insertions as shown in Fig. 6. Genital opening nearly circular, slightly oval; aperture medial, between legs IV; genital plates with straight medial margins, rounded lateral edges, each plate with five setal insertions along medial margin, subequally spaced. Anal opening about twice as large

as genital aperture; anal plates with straight medial margins, rounded lateral sides; each plate with two long setae inserted remote from medial margin. Three pairs of adanal setae, two pairs near antero-lateral margin of anal aperture (Fig. 6); a pair adjacent to posterior margin of anal aperture.

Legs I and II with triangular coxae; coxae of legs III and IV expanded; setation of legs as in Fig. 5.

Length 666 μ, hysterosoma 500 μ; width 400 μ at tubercles.

Dr. Ewing collected two specimens under a rotting log on the top of Mary's Peak, Oregon.

Discussion. The original description of *Hermanniella punctulata* Berlese, 1908, consists of five words that describe the minute pits in the dorsal integument. The description is followed by the measurements (540 μ long, 380 μ wide) and a statement that the species is smaller than *H. granulata* (650 μ long, 450 μ wide). Van der Hammen (1952) points out that the sculpturing of the hysterosoma varies and that some of Berlese's measurements are contradictory.

Ewing (1918) indicates that *H. punctulata* var. *robusta* differs from Berlese's type in size, but his variety also shows other differences than those indicated for the European species. The writer is convinced that both of the varieties which Ewing describes are separate species. *H. robusta* Ewing, 1918, differs from *H. punctulata* Berlese, 1908, in the prominent knobs and dorsal median trough on the propodosoma (Fig. 3). There is an additional distinction in the integumental reticulations, which vary in both European and American species.

Hermanniella occidentalis Ewing, 1918, is considered a separate species because of the rounded, relatively inornate propodosoma, which lacks knobs and a median groove; the sunken

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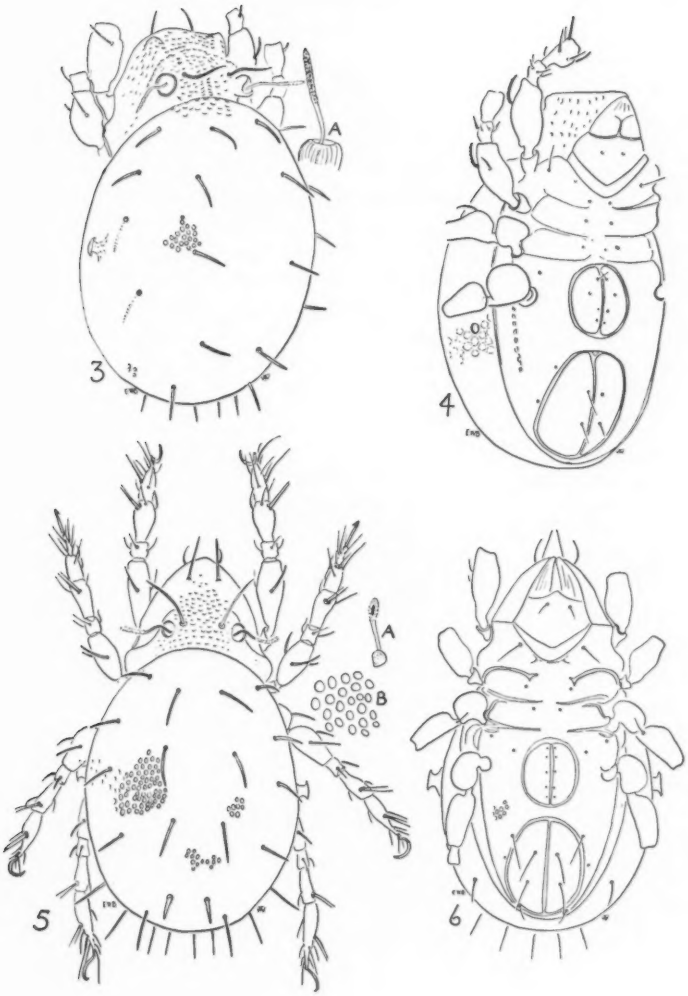
Fig. 3. *Hermanniella robusta* Ewing, 1918, from the dorso-lateral aspect. A. pseudostigmata and pseudostigmatic organ (after Ewing 1918).

Fig. 4. *Hermanniella robusta* Ewing, 1918, from ventro-lateral aspect. Legs partially shown.

Fig. 5. *Hermanniella occidentalis* Ewing, 1918, from the dorsal aspect, showing legs. A. pseudostigmatic organ (after Ewing, 1918); B. enlarged drawing of depressions of hysterosomal integument.

Fig. 6. *Hermanniella occidentalis* Ewing, 1918, from the ventral aspect, most of legs omitted.


A
3
4
A
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6

pseudostigmata, differences in pseudostigmatic organs; the posterior pair of stout hysterosomal bristles; and the difference in setation of the genital covers.

Possibly *Hermanniella subnigra* (Ewing), 1909, should be considered as a separate species inasmuch as Ewing's descriptions and illustrations indicate it is in this genus instead of *Hermannia* (Nic.). The writer does not have a drawing or specimen of this species for comparison, however, and therefore defers exact placement.

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Nomenclature Notice

All comments relating to the following should be marked with the Commission's File Number, and sent to Francis Hemming, 28 Park Village East, Regent's Park, London N.W.1, England.

Bithys and **Chrysophanus** Hübner, 1818 (generic names of neotropical Theclids), suppression of (Order Lepidoptera) (File No.: Z.N. (S.) 802).

Cephalomutilla Andre, (1908), designation of type species for, in harmony with accustomed usage (Order Hymenoptera) (File No.: Z.N. (S.) 902).

For details see: Bull. Zool. Nomencl. Vol. 13, Part 1.

A New Brazilean Species of Campsomeris (Hymenoptera: Scoliidae)

By J. Chester Bradley

Campsomeris tenebrica, n. sp.

♀. Color entirely black, including all vestiture, except whitish puberulence on sides of scutellum and of metanotum, and on the propodeum. Wings black with strong violaceous reflection.

Clypeus convex, wrinkled, its basal margin and depressed sides coarsely punctate and bristly; a narrow impunctate strip below each antenna; area frontalis and spatium frontale not separated, the former with a small median smooth tubercle, the latter with a larger median tubercle, densely punctate and bristly, the bristles extending into the sinus ocularis but not to its apex; lamina frontalis prominent; fissura frontalis distinct; front polished with a few small punctures; ocellar furrow distinct, curved, a weakly indicated furrow extending caudad from behind each of its ends. Vertex, including occipital surface, impunctate and polished, except for a group of fine punctures at corners of the eyes; temples polished, impunctate, except for a line of small punctures bordering the eyes; upper surface of scape punctate.

Dorsal surface of pronotum and the scapulae finely and densely punctate, scapulae becoming much more coarsely and less densely punctate posteriorly; mesonotum impunctate and polished, except for small, sparse punctures on the parapsides and a strip within the parapsidal furrows; median anterior groove distinct; scutellum and metanotum impunctate, polished, the lateral pieces finely punctate and puberulent; mesopleura with a distinct ridge which is strongly punctate on its anterior slope, and the lower part of the lower plate on its posterior slope, its upper plate punctate and hairy except on the lower border, the tubercle pronounced. Metapleura impunctate, polished, but with a little appressed pubescence.

Area horizontalis medialis broad and very short, with neither carina nor tubercle at apex, entirely impunctate and polished;

areae horizontales laterales each with a transverse strip of small punctures and apical puberulence; area posterioris impunctate, smooth, but with some whitish puberulence; areae laterales punctate along their upper and posterior borders.

Terga polished; sternum 3(2) rounded at base; lateral teeth of hypopygium small but distinct.

Longer hind tibial spur spatulate, its proportion to the length of the metatarsus as 8:11.

Length 29 mm., of forewing 23 mm.

Types.—BRAZIL: *Espiritu Santo,* 2 ♀♀ (Frühstorfer—holotype, Mus. Comp. Zool., Harvard Univ. and paratype 1, Cornell Univ.); *Bahia,* 1 ♀ (Frühstorfer—paratype 2, Mus. Comp. Zoology, Harvard Univ.); *Para,* 1 ♀ (C. F. Baker—paratype 3, Mus. Comp. Zool., Harvard Univ.), 1 ♀, 6, 11 '99 (A. Ducke—paratype 4, Cornell Univ.); *Minas geraes,* 1 ♀, 1897 (Frühstorfer—paratype 5, Hungarian Nat. Mus.); Rio Grande, 1 ♀ (paratype 6—Brit. Mus.); "Brazil," 1 ♀ (Frühstorfer—paratype 7, Mus. Comp. Zool., Harvard Univ.).

The holotype and paratype one are entirely black.

Paratypes 5 and 7 have a minute yellow fleck in the center of the metanotum.

Paratype 2 has a larger fleck in the same location.

Paratype 4 has a transverse yellow spot in the center of the metanotum and a minute fleck on the scutellum.

Paratype 6 has a similar spot on the metanotum, and a transverse, interrupted spot, very small, on the scutellum.

Paratype 3 has a transverse yellow spot on the pronotum, and a round yellow spot on the scutellum.

This is a rare species.

New American Muscoid Diptera [1] (Sarcophagidae, Tachinidae)

By H. J. REINHARD, College Station, Texas

The new forms herein described were received for study from several sources as mentioned below and also include some material from my collection. Types of new species based upon the latter are retained and the remainder are returned to the Snow Collection, University of Kansas and to the U. S. National Museum.

Phytodes inconismus, n. sp.

Similar to *P. hirculus* (genotype) but readily distinguished by the shining black pollenless abdomen and the wholly black antennae.

Male. Head thinly grayish to brown pollinose on black background; broad cheek groove red, this color extending upwards on inner part of parafacial to base of antennae; front strongly produced forward in profile and at vertex 0.38 of head width; frontal bristles stopping at antennal base; ocellars proclinate; verticals and orbitals two pairs; antennae unusually small, about one-fourth as long as face, apical segments subequal; arista short, micro pubescent; subbulbous near base; parafacial with a row of bristles extending obliquely downward from inner upper extremity to near lower level of eye and with scattered black hairs outside of latter; cheek equal or exceeding eye height; narrow epistoma produced downward and receding; proboscis short; palpus blackish, short and stoutish.

Thorax and scutellum black, notum with thin subopaque greenish gray pollen, vittae not defined; three post dorsocentral and three sternopleural bristles; prescutellars differentiated; postnotal slope bare; scutellum with three lateral and a small or hairlike apical pair, discals barely differentiated. Wing with a light uniform tawny tinge; first vein bare third setulose almost to small cross vein; first posterior cell closed, petiole reaching

[1] Contribution No. 2590, from the Department of Entomology, Texas Agricultural Experiment Station.

costa a little before wing tip and a trifle shorter than last section of fourth vein; hind cross vein about midway, last section of fifth vein less than one-half length of preceding section; costal spine long; calypters rather small and narrow. Legs black, weakly bristled; claws and pulvilli shorter than apical segment.

Abdomen long ovate, hairs on upper surface appressed; one or two median marginal bristles on second segment and a marginal row on each of last two; sternites exposed; hypopygium black, retracted, forceps thin and slightly bowed in profile, rather broad at base, tapered distally with prongs separated on apical fourth; lobes of fifth sternite small and retracted.

Female. Head and thorax more densely pollinose, palpus usually paler, last three abdominal segments often subpollinose on basal margin; otherwise as in male.

Length, 5.5–7 mm.

Holotype male and *allotype* female, del Maiz, San Luis Potosi, MEX., 4700 ft., Aug. 22–23, 1954, Univ. Kans. Mex. Expedition in the Snow Collection, Univ. of Kansas; *Paratypes,* 6 males and 4 females, same data as type and 2 males, "Valles, Mex., Aug. 9, 1930."

BAROMYIA n. gen.

A minute fly with cephalic characters approaching those of *Procatharosia* and wing venation similar to *Gymnophania* but differing from both in having a longer, more slender, subtubular abdomen.

Female head wider than high, frontal profile equal to facial, antennal axis at or slightly above eye middle and barely longer than vibrissal which is close to ventral margin of head; clypeus deeply depressed widened downward, short epistoma full width and gently bowed forward from clypeal plane; faciale almost vertical with one or two bristly hairs on lower extremity; vibrissae long, decussate, on oral margin; frontals short, rather weak, in a single row extending two bristles beneath antennal base; two proclinate and one reclinate orbital and two vertical pairs; proclinate ocellars small but distinct; antenna reaching nearly to epistoma, third segment widened from base to broadly

rounded apex and hardly one-half longer than second, first segment very short; arista a little longer than antenna, thickened near base thence slender and micro pubescent to tip, basal segments short; bare parafacial narrow above middle becoming linear below; eye bare, not quite reaching vibrissal level; proboscis short, labella fleshy; palpus rather short, spatulate; cheek about one-sixth eye height. Thoracic chaetotaxy poorly developed, only the middle supraalar, hindmost postalar and the single lateral scutellar approach macrochaetal size; prescutellars and outer presutural differentiated; dorsocentral 2, 3 (barely larger than surrounding hairs); humeral 3–4; sternopleural 2; hypopleural row distinct, pteropleural absent; postscutellum very prominent; propleuron bare; postnotal slope setose along attached edge of calypter. Legs stoutish, weakly bristled; fore tarsus longer than corresponding tibia; claws and pulvilli shorter than apical tarsal segment. Wing extending about to tip of abdomen; third vein with two minute hairs near base; fourth vein only slightly curved beyond middle or without a defined cubitulus and reaching costa a trifle beyond extreme wing tip leaving first posterior cell open; costa broken near apex of subcostal vein, spine absent; calypters well developed. Abdomen widest on basal third thence tapering to a narrow truncate tip; anal segment much shorter than preceding ones and all segments destitute of macrochaetae; sternites covered.

Genotype. Baromyia mitis, n. sp.

Baromyia mitis, n. sp.

Female. Front uniformly broad from antennal base to vertex, latter 0.37 of head width; frontalia red, widened before ocelli and extending on either side of triangle to vertex; parafrontal gray to subplumbeous, with only a few minute hairs anteriorly which extend to or beneath lowermost frontal, antenna reddish to arista thence black to apex; arista reddish on thickened base, black beyond; parafacial and cheek gray pollinose, latter sparsely black setose; palpus brownish to almost black.

Thorax brownish in ground color, notum lightly dusted with opaque gray pollen, not vittate, pleura subshining; scutellum concolorous with notum; halteres pale yellow, rather short and

strongly enlarged at tip. Legs black, femora moderately thickened; tarsi beset above with a vestiture of suberect short black hairs, basal segment short. Wing clear with a slight yellowish tinge apparent anteriorly; veins yellow including costa which bears somewhat longer and denser spinules before break than beyond; calypters more or less infuscated with margin and sometimes middle area of both lobes a little paler.

Abdomen brownish black in ground color with narrow hind edge of last three segments pallid and upper surface of each (in well preserved specimens) showing thin gray pollen at sides and forming a pollinose median vitta when viewed in a flat rare angle; anal cerci forceps like; genitalia retracted.

Length, 1.75–2 mm.

Holotype female, Kerrville, TEXAS, June 16, 1953 (L. J. Bottimer) in the U. S. National Museum. *Paratypes,* 3 females, same data as type.

Parepalpus labeosus, n. sp.

Much darker in general aspect than *P. flavidus* Coq. (genotype), from which it differs further in having a red abdomen, marked with a distinct but interrupted black median vitta; wings and calypters distinctly infuscated, etc.

Male. Head densely yellow pollinose, parafrontal darker, clothed with longish black hairs outside and inside main frontal row, which is doubled anteriorly with about three bristles beneath antennal base; vertex 0.32 of head width; verticals two pairs, inner decussate; ocellars absent; frontalia red, narrower than parafrontal; antenna yellow to base of third segment, latter black about one-third longer than second and strongly convex on front edge; arista black, thickened on basal two-fifths, middle segment moderately elongated; parafacial fully one-half clypeal width, sparsely clothed with intermixed pale and black hairs; faciale flattened with three or four bristles next to vibrissae; latter well above the nasutely produced epistoma; cheek slightly over three-fifths eye height, beset with long pale hairs; proboscis a little over head height; palpus papilliform, bearing several black setae of unequal length; eye bare; back of head clothed with pale yellowish pile.

Thorax black with moderately dense greenish gray pollen, mesonotum marked with four narrow dark vittae, outer one interrupted at suture and stopping well before base of scutellum; latter wholly reddish and lightly sprinkled with white pollen. Chaetotaxy: acrostichal 3, 3; dorsocentral 3, 3; intraalar 3; supraalar 3; presutural 2; posthumeral 2; humeral 4–6; postalar 3; sternopleural 3; pteropleural 2 (as large as sternopleural); scutellum with 2 lateral, 1 decussate apical, 1 preapical and 6–8 discal pairs, besides numerous erect bristly hairs on basal half; prosternum and postnotal slope bare; propleuron black setose. Legs yellow, rather long and slender, well bristled; yellow black-tipped claws subequal to length of last tarsal segment. Wing uniformly fuscous throughout; first posterior cell open well before wing tip; hind cross vein oblique, joining fourth much nearer to cubitulus than small cross vein; costal spine vestigial; epaulet red, subepaulet pale yellowish; calypter reddish brown.

Abdomen short ovate, wider than thorax and practically pollenless on upper surface which bears a vestiture of erect fine black hairs; one pair of median marginals and discals on second segment, a complete marginal row and one pair of discals on third; anal segment with several irregular rows of discal on apical half above besides a row of weaker marginals; hypopygium small and retracted; forceps broader than long, fused nearly to tips which are separated by a small V-shaped excision, hind surface convex and beset with longish wavy black hairs; accessory process yellowish on broad basal part, much narrowed or fingerlike distally; fifth sternite black, lobes hardly divergent along median excision, clothed with fine black hairs; sternites two to four well exposed beset with black hairs and bristles.

Female. Similar to male except for sexual differences; genitalia retracted within anal orifice, terminating in a fleshy or soft-textured bunt tip.

Length, 9.5–10 mm.

Holotype male, Cuernavaca, MEX., 3–22–34 (S. E. Jones). *Allotype* female, "West Slope Cortez Pass, Mex., 9000′, 7–13–54, Univ. Kans. Mex. Expedition." *Paratypes,* 2 males and 1 female, same data as allotype, two collected by R. R. Dreisbach

and 1 male, "Cuernavaca, Mor. Mex., 7100', 7–15–54, Univ. Kans. Mex. Expedition."

Plagiomima euethes, n. sp.

Pollen on abdomen disposed in evident crossbands as in *alternata* Ald., from which it differs most obviously in the conformation of the genital forceps.

Male. Front at vertex 0.45 of head width and only slightly wider at antennal base; head pollen subsilvery with a yellowish or slightly golden cast on parafrontal; latter with scattered black setae which continue downward on parafacial; vibrissae on oral margin with only three or four hairs on ridge next above; two pairs of large verticals, proclinate orbitals and preverticals; ocellars divaricate, proclinate; two frontal bristles beneath antennal base; cheek bare about one-third eye height; proximal antennal segments red, third wholly black, stout, a trifle over twice length of second; arista bare, short, thickened nearly to tip, second segment about twice longer than wide; haustellum slender, nearly two-thirds head height, labella small; palpus yellow, slender to tip; occiput cinereous, rather thinly clothed with short pale hairs.

Thorax and scutellum black gray pollinose, notum marked with four vittae before suture and five behind. Chaetotaxy: acrostichal 3, 3; dorsocentral 3, 3; intraalar 3; supraalar 3; precutural 2; postalar 3 (intermediate one very stout); sternopleural 3; pteropleural vestigial; scutellum with 3 lateral (hindmost weak and middle one reaching to base of third abdominal segment), 1 preapical and 1 much larger decussate apical besides 1 discal pair behind middle with erect bristly hairs in front of latter; prosternum, propleuron and postnotal slope bare. Legs black, mid tibia with a row of unequal-sized bristles on outer front side; front tibia with two median posterolateral bristles; claws and pulvilli short. Wing gray hyaline; first, third and fifth veins setose; hind cross vein oblique and strongly retracted with last section of fifth vein subequal to preceding; cubitulus with a long stump plus fold; costal spine vestigial; calypters opaque white.

Abdomen with gray pollen on last three segments in broad basal bands leaving apical third or more of each shining black; one pair of median marginals on second segment and a marginal row on third; anal segment with a submarginal and marginal row; no discals; hypopygium black, largely retracted in repose; forceps fused, black base subglobose behind thence flattened into a thin reddish bladelike structure which is thin and broadly bowed in profile; sternites covered.

Female. Antennae a little more slender than in male; genitalia retracted not adapted for piercing.

Length, 6.5–8 mm.

Holotype male and *allotype* female, Sedona, ARIZONA, September 13–16, 1955 (G. D. Butler). *Paratypes:* 1 pair, same data as type and 1 male, Flagstaff, Arizona, September 12–16, 1955 (G. D. Butler).

Plagiomima faceta, n. sp.

Aside from its larger build, this species differs from the preceding one mainly as follows:

Male. Head pollen wholly grayish yellow on pale background; vertex 0.47 of head width; red frontalia diverging upwards and much wider than parafrontal above middle; third antennal segment nearly three times longer than second; ocellars divaricate; three proclinate orbitals but middle one weak; parafacial subequal clypeal width, beset with short inconspicuous pale and black setae; cheek two-fifths eye height; haustellum slender, about three-fifth head height. Thoracic chaetotaxy as in preceding species; postnotal slope setose, propleuron bare. Wing pale yellowish costobasally; first and third veins setulose, fifth bare; costal spine subequal to small cross vein. Abdomen with gray pollen extending nearly to hind margin on intermediate segments but stopping at apical third of last leaving apex shining black; fused genital forceps strongly compressed and bladelike straight from base to tip on ventral edge as viewed from side with hind apical margin bowed obliquely forward to a blunt reddish tip; accessory process as wide as forceps but a trifle longer, with apex more broadly rounded and hind margin

sulcate; fifth sternite with a broad median excision, lobes black with longish fine black hairs along inner margin.

Female. Anal segment of abdomen strongly deflexed and without any macrochaetae, polished black on apical half above; genitalia retracted, terminating in a compressed blunt-tipped larvipositor; otherwise similar to male.

Length, male 12 mm; female 10.5 mm.

Holotype male and *allotype* female, Plainview, TEXAS, 9–25–48 (F. A. Cowan).

The species belongs in *Siphoplagiopsis* (type *similis* Townsend), if the latter, based chiefly upon female characters, is accepted as valid.

Phorocera pellecta, n. sp.

Close to *P. indivisa* A & W, but the abdomen is more extensively pollinose; the male front is wider and there are decisive differences in the genitalia.

Male. Head bright silvery pollinose becoming opaque on parafrontal; vertex 0.35 of head width; inner verticals and two preverticals stout and reclinate; ocellars long, proclinate, frontal rows widely divergent beneath antennal base and descending to level of arista; latter black, bare, long and slender, with short proximal segments; antenna black, third segment rather broad and over three times length of second; facialia strongly bristled to upper third or more; vibrissae on oral margin; eye pilose; cheek a little over one-fifth eye height; palpus yellow; proboscis short; occiput cinereous, pale-haired.

Thorax and scutellum black, with moderately heavy gray pollen marked with 4–5 changeable vittae on notum; chaetotaxy as in *indivisa.* Legs black; fore tibia with one stout posterolateral and mid tibia with two anterodorsal bristles; claws and pulvilli subequal to length of last tarsal segment. Wing gray hyaline; first posterior cell open well before wing tip; cubitulus subrectangular, without a distinct stump or fold; third vein with 3 to 6 setulae near base; costal spine small; calypters white.

Abdomen black with changeable subsilvery pollen on basal half or more of last three segments above; one pair of median

marginal bristles on first and second segments; a marginal row on third and fourth besides a discal row on latter, which is also beset with erect bristly hairs on most of upper surface; hypopygium black, smallish and retracted with tip of anal segment; forceps with a deep groove behind which is densely clothed with a vestiture of pale or whitish hairs. In the undescribed male of *indivisa* the forceps compared with the present species, are broadly expanded basally, flattened behind and thickly clothed with soft short black hairs.

Female. Front at vertex 0.36 of head width gradually diverging forward into facial angle; two pairs of proclinate orbitals; outer verticals differentiated; abdomen with heavier pollen and anal segment more narrowed apically than in male; claws and pulvilli shorter than last tarsal segment.

Length, 6.5–8 mm.

Holotype male and *allotype* female, Brown's Cn. Baboquivari Mts. Ariz., August 19, 1955 (F. G. Werner & G. D. Butler). *Paratypes,* 7 females, "Catalina Mts., Ariz. Htchk. Hwy. Mi. 1, August 22, 1955, G. D. Butler & F. G. Werner."

Phorocera stolida, n. sp.

Traces to *P. coccyx* (equals *P. heros* Schiner = *Masicera longiuscula* Walker) in Aldrich and Webber's key (Proc. U.S.N.M., 63, 1924: 46, 52), from which it differs chiefly in genital features as listed below.

Male. Vertex 0.27 of head width, front equibroad on upper half thence widening gradually into facial angle; parafrontal yellow pollinose, uniformly clothed with fine black hairs; frontals in a single row, three or four bristles beneath antennal base, two uppermost reclinate and but little shorter than inner vertical; proclinate ocellars strong, usually more or less parallel and reaching beyond mid front; frontalia reddish black, narrower than parafrontal; black antenna as long as face, third segment unusually compressed and widened, nearly five times longer than second, which barely equals one and one-half times length of first segment; bare arista black, uncommonly long, thickened on proximal fourth thence flattened and slender to tip, basal

segments short; clypeus and faciale cinereous, latter with strong infraclinate bristles ascending above level of lowest frontals; vibrissae on oral margin; bare yellowish parafacial becoming grayish below; proboscis short, haustellum subequal length of spatulate yellow palpus; cheek gray pollinose, clothed with fine black hairs, about one-sixth eye height; eye large and thickly long pilose; occiput with a heavy vestiture of yellowish white pile.

Thorax black scutellum with a reddish tinge in ground color, gray pollinose; notum with four narrow dark vittae before suture and five behind. Chaetotaxy: acrostichal 3, 3; dorsocentral 3, 4; intraalar 3; supraalar 4; humeral 5–6; posthumeral 3; presutural 2; postalar 2; intrapostalar strong; sternopleural 3; pteropleural 2 (smaller than hindmost sternopleural); scutellum with 3 lateral, 1 wide-spaced appressed discal and 1 strong usually decussate apical pair directed backward. Legs long but not very slender; mid tibia with two strong bristles before middle on outer front side; fore claws and pulvilli subequal combined length of last three tarsal segments. Wing gray hyaline; third vein setulose one-fourth to halfway to small cross vein; cubitulus rectangular without stump or fold; first posterior cell open well before wing tip; costal spine vestigial; calypters translucent white.

Abdomen well tapered towards tip, black with ground color at sides sometimes showing a reddish tinge, last three segments with gray pollen which becomes thinner beyond middle on each and in some views interrupted by a vague dark median vitta; one pair of median marginal bristles on first two segments and a marginal row on last two, besides a submarginal row with numerous shorter discals and erect bristly hairs in front of latter on anal segment; hypopygium blackish, rather small and retracted; fused forceps rather thick in profile and in rear view equibroad to middle thence tapered to a sharp beaklike tip, deeply excavated behind with surface of latter bearing dense yellow hairs, which are replaced on either side near base by a fasicle of longer black hairs directed obliquely forward and terminate in pale wavy tips; fifth sternite with a broad and deep

median excision, lobes black, large and prominent. Female unknown.

Length, 12–14 mm.

Holotype, Amherst, OHIO, August 28, 1930 (H. J. Reinhard). *Paratypes,* 2 males, same data as type and 1 male, Blood Mt., Ga., September 20, 1945 (P. W. Fattig) in the U. S. National Museum.

Phorocera noera, n. sp.

Smaller in build than *stolida,* differing chiefly in the structure of the male genitalia as noted below. Other minor differences may be listed as follows:

Male Only. Length 10 mm. Head pollen bright silvery becoming somewhat brassy on parafrontals; third antennal segment nearly equibroad from base to tip and four times longer than second; five narrow notal vittae; median one well defined to base of scutellum; mid tibia with one strong median anterodorsal bristle; fore pulvilli subequal to combined length of last two tarsal segments; abdomen with moderately heavy gray pollen above on basal three-fifths of segments two and three and on basal half of last, remainder of each subshiny black; hypopygium well exposed in repose, second segment reddish; fused forceps strikingly slender from base to acute apex, hind surface grooved with a low but sharp median carina extending outwardly from base about halfway to tip; lateral margin of forceps sparsely clothed with black hairs and base behind more thickly so; fifth sternite deeply incised, lobes widely exposed, bearing some longish black hairs on inner basal margin.

Holotype: Male, "Cuernavaca, MEXICO, August 6, 1942."

This specimen has been in my collection for some time awaiting additional material. The species is included here since it is closely allied to the preceding form.

Euceromasia floridensis, n. sp.

Readily distinguished from *E. solata* by the wholly reddish legs and abdomen and the presence of defined patches of dense

appressed hairs on venter of third abdominal segment in the male.

Male. Front well narrowed above middle, at vertex 0.22 of head width; frontalia deep red, narrower than parafrontal; frontals reclinate above mid front, three bristles beneath antennal base; proclinate ocellars weak or hairlike; verticals (inner) erect, as large as upper frontals; head pollen gray on dark background; parafrontal sparsely setose outside frontal row; bare parafacial moderately narrowed downward; vibrissae large, on oral margin, with bristly hairs on ridge above extending up on about basal third; antennal segments one and two pale reddish yellow, third black, rather slender but less than twice length of second; arista brownish, micro pubescent, thickened on about proximal fourth thence tapered and very slender to tip, both basal segments short; cheek about one-fifth eye height, clothed with black hairs and several bristles near middle, eye bare, rather large and descending to vibrissal level; proboscis short, stoutish, labellum large and fleshy; palpus pale reddish yellow, slightly flattened and beset with short stubby black hairs before apex; occiput flat, grayish pollinose, with a vestiture of rather short sparse pale hairs.

Thorax and scutellum black, gray pollinose, humeri pleura and apex of scutellum with a reddish tinge in ground color; notum marked with four narrow black vittae, outer pair interrupted at suture and inner ones stopping shortly behind; acrostichal 3, 3; dorsocentral 3, 4; intraalar 3; supraalar 3; humeral 3; posthumeral 2; presutural 2; postalar 2; intrapostalar well developed; sternopleural 3 (almost in horizontal row); pteropleural 1 (shorter than hindmost sternopleural); scutellum with 3 lateral, 1 discal and 1 weak non-decussate suberect apical pair; postnotal slope bare. Mid tibia with one good-size bristle on outer front side beyond middle; hind tibia subciliate or with a row of rather widely spaced uneven bristles on outer posterior edge; claws and pulvilli equal to or exceeding length of last tarsal segment. Wing hyaline with a faint yellowish tinge except on hind margin; veins including costa yellow, third with two to four hairs near base; cubitulus broadly rounded, without stump or fold; first posterior cell open shortly before wing tip;

calypters tawny, semitransparent; epaulet and subepaulet reddish.

Abdomen conical, somewhat thickened in profile, last three segments gray pollinose above but thinly so behind middle on two and three; one pair median marginal on basal segments, one median and four or more lateral discals besides a marginal row on third; anal segment with two or more irregular discal, one submarginal and a marginal row; anal orifice narrow and slitlike; sternites covered.

Female. Front at vertex 0.28 of head width, diverging rather strongly downward into facial angle; two proclinate orbitals; outer verticals vestigial; calypters whitish tinged with yellow; claws and pulvilli shorter than apical tarsal segment; one discal and one marginal row of bristles on fourth abdominal segment; genitalia retracted, not adapted for piercing.

Length, 5.75–7 mm.

Holotype male and *allotype* female, "Seabreeze, FLA., Host: *Trichostiba parvula,*" in the U. S. National Museum. *Paratypes,* 1 male and 2 females, same data as type; 1 female, Ormond Beach, Florida, 6–5–55 Cat. No. P-248b, ex: *T. parvula,* and 1 female, "College Station, Texas, July 1916."

A New Film

NATURAL ENEMIES OF INSECT PESTS directed by Dr. C. A. Fleschner, Department of Biological Control, Univ. of California. 16 mm. color and sound, 27 minutes. Educational Film Sales Department, University Extension, University of California, Los Angeles 24, Cal. Price: $195.00. Rental: $6.00.

This film shows a total of eleven beneficial insects, with extreme close-ups of ladybird beetles feeding on scale insects and mealybugs, of a wasp and fly attacking the grape leaf skeletonizer, and of oviposition and the complete life cycle of the green lacewing. It also shows laboratory testing of the effects of insecticides on beneficial insects, and demonstrates mass production in the insectary of chalcids that are used to control the red scale on citrus.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleign, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Tenebrionidae of the World wanted, in exchange for insects of Argentina and neighboring countries. Horacio J. Molinari, Av. Lib. Gral. San Martin 55, Acassuso (Buenos Aires), Rep. Argentina.

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THE NEOTROPICAL SPECIES OF THE 'SUBGENUS AESCHNA' SENSU SELYSII 1883 (Odonata)

By Philip P. Calvert

This paper presents an account of the Neotropical species referred by de Selys in 1883 to his subgenus *Aeschna* and of some species unknown to him. His subgenus is here divided into three genera, *Aeschna, Coryphaeschna,* and *Castoraeschna, Aeshna* in its turn being subdivided into the subgenera *Aeschna, Hesperaeschna, Rhionaeschna, Schizuraeschna, Marmaraeschna* and *Neureclipa.* These five subgenera include 2, 15, 1, 3, 4 and 5 species and subspecies respectively. *Coryphaeschna* embraces 9 species and subspecies, *Castoraeschna* 5. Larvae of 2 species of *Hesperaeschna,* 1 species of *Schizuraeschna,* 1 species of *Neureclipa* and 6 species of *Coryphaeschna* are described and figured. Generalities are discussed under the headings: Relationships of the Neotropical Aeshnas to the North American fossils; Relations of the South American Aeshnas to the Palaearctic and Australian species; The geological age and geographical distribution of the ancestors of the Odonata and of the Mammalia; Relations of the Neotropical Aeshnas to each other; The seasonal distribution of the Neotropical species of Aeshna. Forty plates in black and white illustrate the structural and colorational features of the adults, seven those of the larvae. Nineteen tables show the variations in size and in venation of the adults. Six maps show the geographic distribution of all the species concerned. There is an alphabetical index of species, subgenera, genera, authors quoted, and topics.

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